

# *Miniature DVR*

## *AKR-100*

### *User's Manual*



※ The contents of the manual can be modified without prior notice to customers



## GENERAL SAFETY AND PRECAUTIONS

This AKR-100 is manufactured to satisfy international safety standards. Review the following safety precautions to avoid injury and prevent damage to the AK-30 or any products connected to it.

1. Use a proper power source. Do not operate this product from a power source that applies more than the specified voltage (DC12V).
2. Never insert anything metallic into the AKR-100 - this can cause electric shock.
3. Do not operate in wet & dusty conditions. Keep product surfaces clean and dry. Avoid placing the AK-30 in areas like a damp basement or a dusty hallway.
4. Do not expose this product to rain or use near water. If the product gets wet, unplug it and contact an authorized dealer immediately.
5. To clean the outside case of the AKR-100, use a lightly dampened cloth (no solvents).
6. Do not operate with suspected failures. If there are any unusual sounds or smells coming from the AKR-100, unplug it immediately and contact an authorized dealer or service center.
7. Do not attempt to remove the top cover.  
Warning: Removing the AKR-100's cover can cause severe electrical shock.
8. Handle AKR-100 carefully to avoid damaging the product. If you accidentally drop your AKR-100 on any hard surface, it may cause a malfunction. If the AKR-100 doesn't work properly due to physical damage, contact an authorized dealer for repair or exchange.
9. Use standard lithium cell battery. (NOTE: Manufacturer has preinstalled battery.)  
The standard lithium cell 3V battery located on the mother board should be replaced if the time clock does not hold its time after the power is turned off.

### **Warning:**

Unplug the AKR-100 before replacing battery or you may be subjected to severe electrical shock. Properly dispose of old batteries.

### **Caution:**

Risk of explosion if battery is replaced by an incorrect type. Do not discard lithium batteries into the trash can or into fire. Dispose in accordance with local waste regulations.

### **Information to user**

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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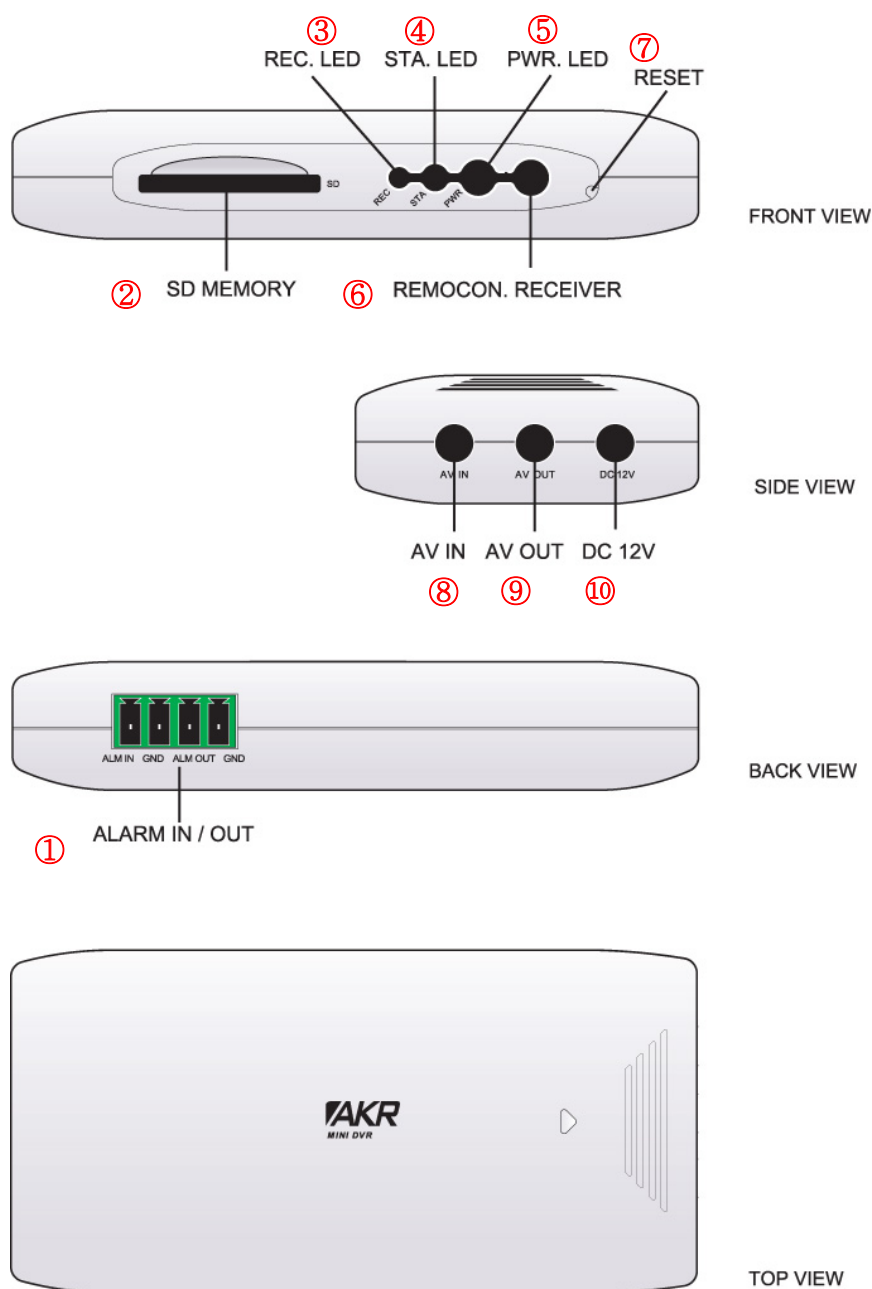
## Chapter 1: Packing Contents

### ► Contents in the package

		
AKR-100 Main Unit	Remote Control	AV-IN / AV-OUT Connector
		
Terminal Block	12V Power Supply	Installation CD
		
Quick Guide	SD Card (Option)	USB SD Reader (Option)

## Chapter 2: Getting To Know Your AKR-100

### ► AKR-100



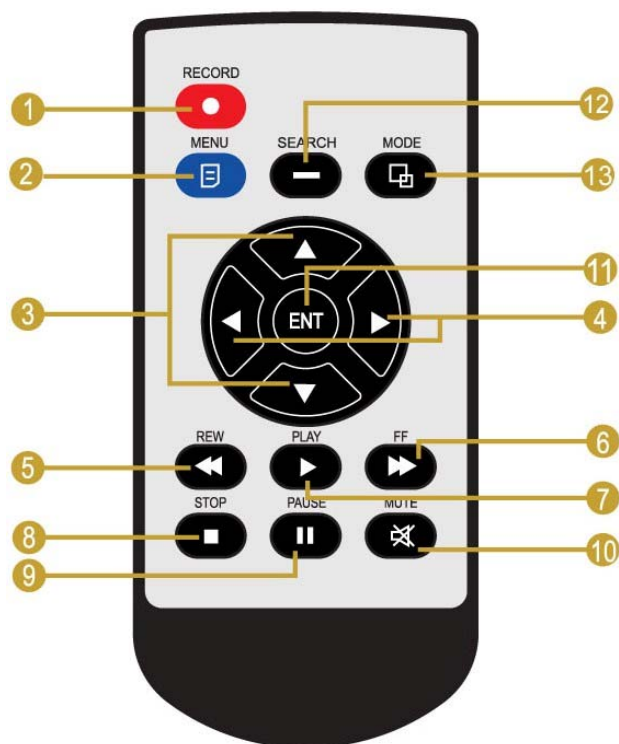
This chapter briefly describes the functions of each button on AKR-100. The buttons are used to operate the basic functions of AKR-100, such as recording, playback, fast-forward, reverse play and etc. For more details on the set-up and operation of AKR-100, refer to Chapter 6, AKR-100 MENU.

### 1 Sensor-in / Alarm-out

The sensor terminal block is used to connect a sensor such as PIR to the AKR-100. If you add motion sensor devices to your AKR-100, the video recording can be triggered by event. The alarm output terminal is used to install a single alarm device.

<b>2</b>	<b>SD Memory Slot</b>
	Insert SD Card into the slot for storing data.
<b>3</b>	<b>Recording LED</b>
	This light indicates while AKR-100 is on recording mode.
<b>4</b>	<b>Status LED</b>
	This light blinks when events occur or there is any error..
<b>5</b>	<b>Power LED</b>
	This light indicates the AKR-100is powered up.
<b>6</b>	<b>Remote control Receiver</b>
	When controlling AKR-100 by remote control, be sure to point at the receiver.
<b>7</b>	<b>Reset</b>
	Press the reset button if you want to return setting values to the default.
<b>8</b>	<b>AV-IN</b>
	Connect AV-IN connector
<b>9</b>	<b>AV-OUT</b>
	Connect AV-OUT connector
<b>10</b>	<b>Power</b>
	Connect 12V power supply in the package.

## Chapter 3: Remote control



- 1 REC: The button to start recording or stop recording
- 2 MENU: The button to enter 'MENU' mode.
- 3 UP/ DOWN: The buttons to choose a menu field and change a value.
- 4 FF: The button to play recorded video forward.  
REW: The button to play recorded video backward.
- 5 REW: The button to play recorded video backward.
- 6 FF: The button to play recorded video forward.
- 7 PLAY: The button to start video playback.
- 8 STOP: The button to stop playback.
- 9 PAUSE: The button to pause video playback..
- 10 MUTE: The button to pause audio.
- 11 ENT: The button to choose or change a menu option or values in a menu field.
- 12 SEARCH: The button to find recorded files in SD Memory.
- 13 MODE: The button to switch between playback and recording mode.



## Chapter 4: Getting Started

### OVERVIEW ON SET-UP PROCEDURES

**Below is an overview of the installation steps required get your AK-30 unit working. Each step is explained in detail in Chapter 5 - Hardware Installation.**

- (1) Insert a SD MEMORY.
- (2) Connect AKR-100 to a TV set or monitor.
- (3) Connect camera to AKR-100.
- (4) Connect optional accessories (sensors or alarm).
- (6) Connect the power.
- (7) Turn the power on.
- (8) Start TV Monitoring and recording.

#### General Operating Advice:

- Make sure that a SD Memory is inserted and one camera is properly connected.  
(See Chapter 5 -Hardware Installation)
- The SD Memory Format setting must be set (Refer to Chapter 5 – SD Memory Installation for more information.) Otherwise, AKR-100 may not recognize the SD Memory.
- The firmware used in AKR-100 is compatible with your computer's operating system (i.e. Windows). Therefore, you can take the SD memory card from this AKR-100 and install it in your computer to view recorded video. (Refer to the PC Viewer manual.)
- AKR-100 offers you the flexibility to choose a recording frame rate (maximum rate: 30 frames per second). A faster frame rate provides more natural video images in recorded video files. However, it requires more SD Memory storage. You may reduce the frame rate (minimum rate: 1 frame per second) to fit longer recording sessions in consideration of your SD card capacity.
- If a camera is normally connected to AKR-100, it enters the default operational state: VIEW mode. In this mode, AKR-100 does not record nor play the recorded stream. It just shows the current images from camera connected to AKR-100.
- The default values of AKR-100 for recording are set up at 30 frames per second with normal video quality. If you use 1GB SD Memory, AKR-100 can record approximately for 2 hours in a row.
- There is an exception to entering the VIEW mode at start up. If the power is abnormally turned off while AKR-100 is performing emergency recording (i.e. a power failure), it will enter recording mode automatically when you reboot AKR-100.

**Refer to Chapter 5 - Hardware Installation for more information on installation procedures.**

## Chapter 5: Hardware Installation

### SD MEMORY INSTALLATION

#### ① Format SD Memory

Insert SD memory into SD card slot on your PC and format it in FAT32.

※ In case there is no card slot on your PC, use additional memory reader device.

#### ② Insert SD Memory into SD slot on AKR-100

After formatting, take SD Memory from your PC and insert it into SD slot on AKR-100.

#### ③ Backup recorded files in SD Memory

When SD Memory storage is full, the recorded files can be backed up in your PC. Insert SD card in your PC and move the files of SD card into the HDD of our PC. You can also check each recorded file through AKR Player.

※ Seorim Technology recommends SanDisk or Transcend SD, which has been proved to be compatible with AKR-100.

Seorim Technology does not guarantee compatibility with other makers'.

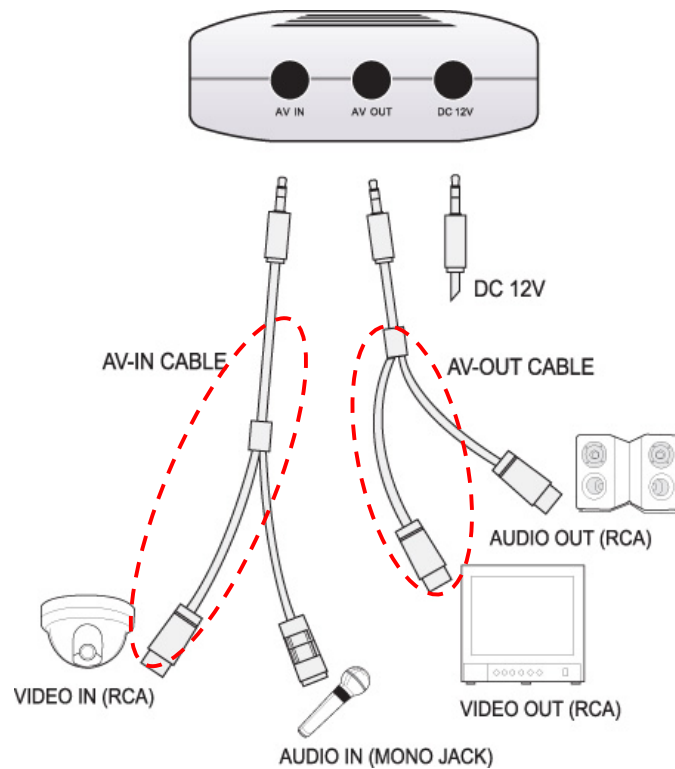


#### Attention

Do not take out the SD card or turn off MiniD-100 while recording.  
It may damage SD card

### CONNECTING AKR-100 TO YOUR TV SET OR MONITOR

#### ① Video Input/Output Connection (For TV / monitor screen display)

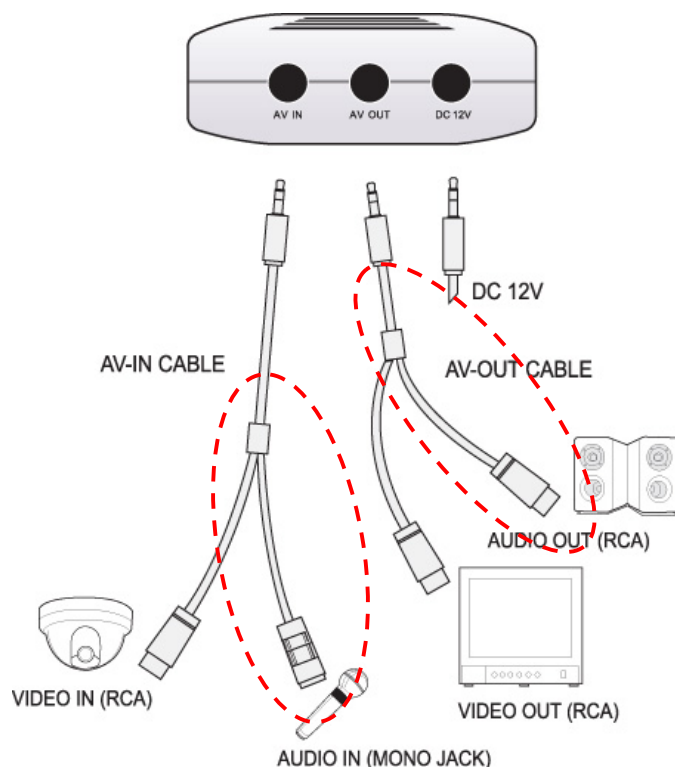


To display images from the AKR-100, connect the video output signal to your monitor or Television. Any Television with a VIDEO INPUT terminal is suitable for displaying the images. The diagram above shows the video signal connections.

Connect the camera to VIDEO-IN terminal of AV-IN connector; connect the monitor to VIDEO OUT terminal of AV-OUT connector.

**Note:** The RCA cable required for this connection is not included in the package of AKR-100.

## ② Audio Input/Output Connection (For TV / monitor speaker)



Connect the microphone to AUDIO-IN terminal of AV-IN connector; connect the speaker to AUDIO OUT terminal of AV-OUT connector.

**Note:** The RCA cable required for this connection does not come packaged with the AKR-100.

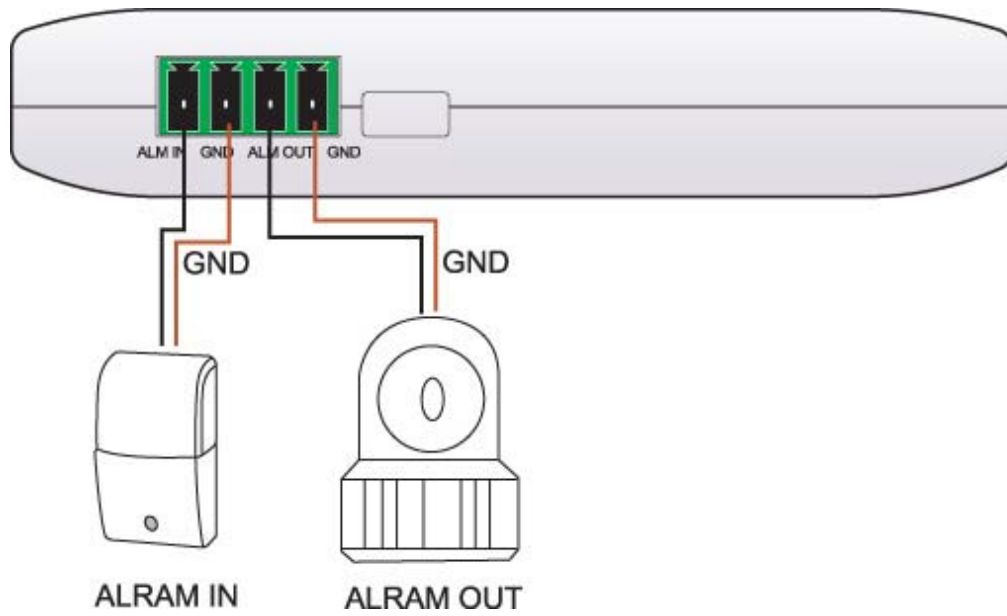
## ALARM INSTALLATION

The AKR-100 has an internal switch for sounding an alarm. When a sensor is triggered, the alarm is activated as well.

There are two steps to install an alarm.

1. Connect the alarm power lines to the alarm switch terminal.
2. Connect the alarm power lines to the appropriate power source.

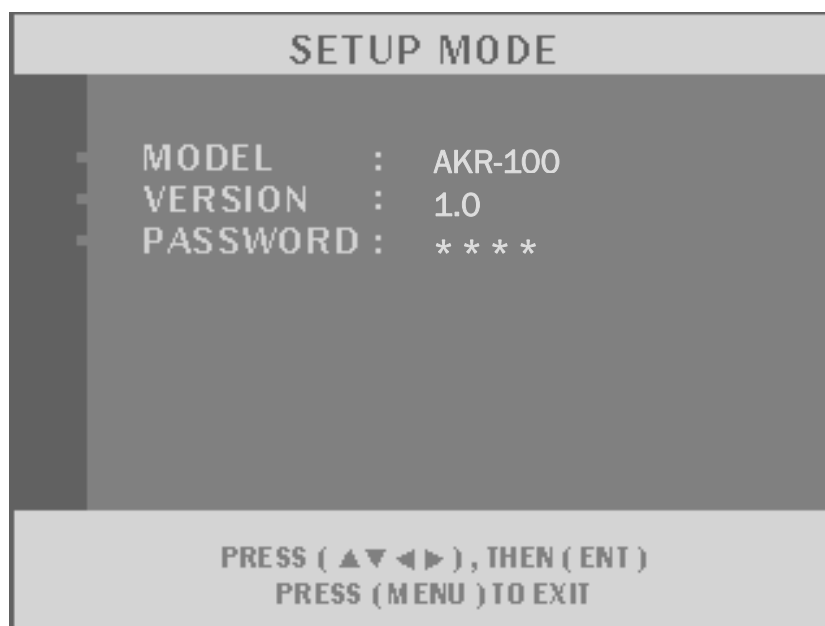
Refer to the diagram below for information on how to connect an alarm to your AKR-100.



**Note:** Contact an authorized dealer for information about buying the appropriate alarm device for your needs and for information concerning proper installation procedures.

## Chapter 6: AKR-100 Menu

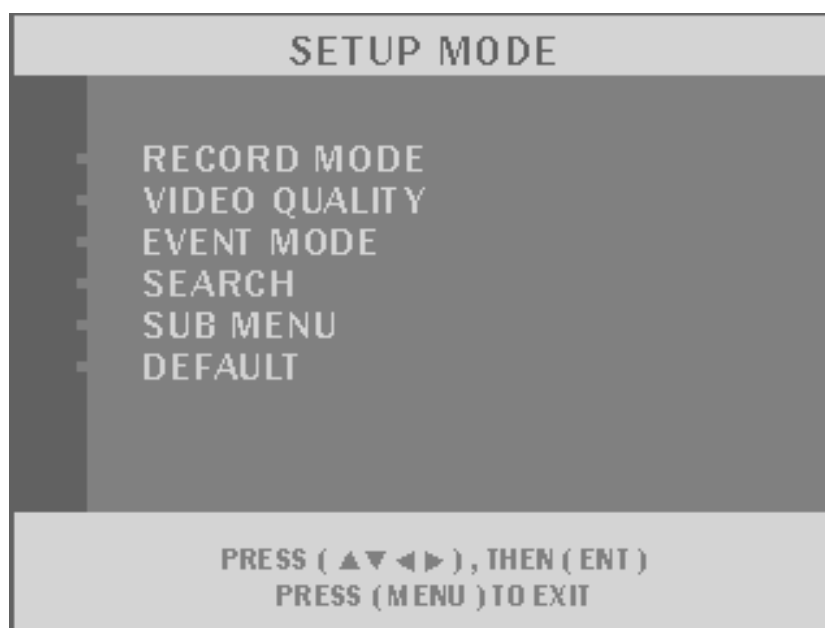
### 1. ACCESS TO OSD MENU



Press 'MENU' button on remote control to access to AKR-100 OSD menu.  
Please refer to 'Chapter 3: Remote control' about how to use remote control buttons.

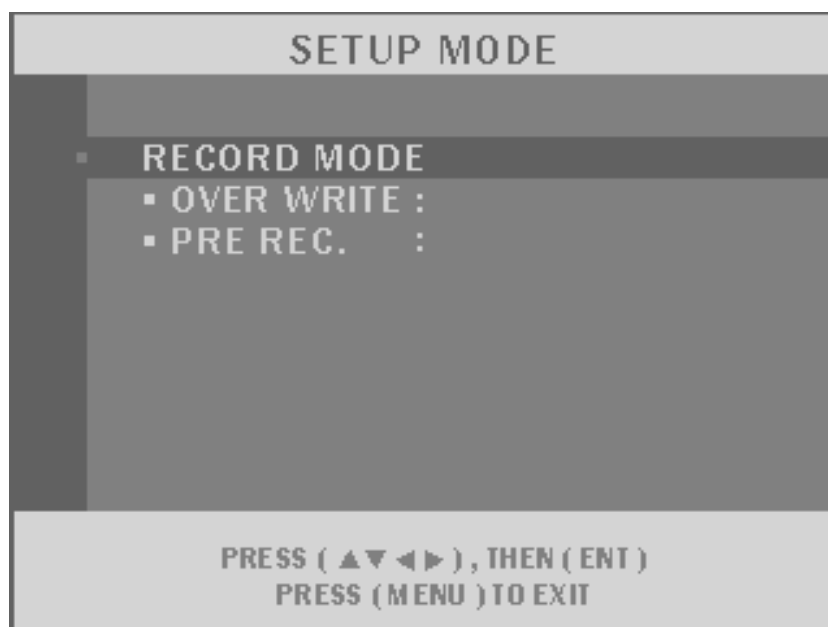
Password is '0000' as default. The password can be changed on '[SUB MENU]→[PASSWORD CHANGE]'.  
In order to select cameras for recording, set recording quality, schedule recording times and to set other operation parameters, you will need to access the AKR-100's menu.  
Numerals can be selected by pushing up/down button on remote control.

### 2. MAIN MENU



In the main menu, the 'indicator '■' will be shown on the left of each menu.  
Press 'UP/DOWN' button on remote control to select a desired menu. After placing '■' on the desired menu and press 'ENTER' button to enter the menu.

### 3. RECORD MODE

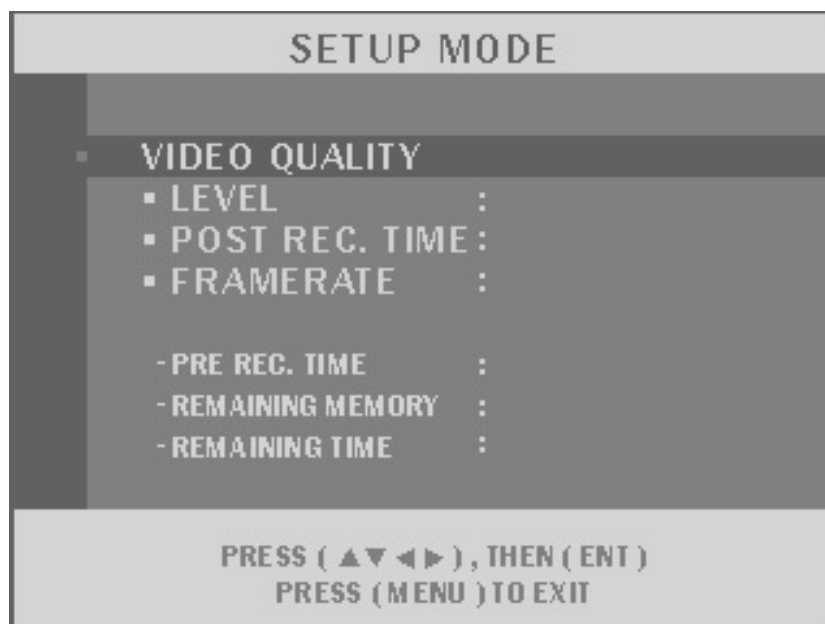


#### 3. RECORD MODE

3.1 OVERWRITE (ON/OFF): If this option is ON, recording keeps going on by deleting old recorded files when SD memory storage capacity is full. If it is OFF, the recording session stops when all SD Memory is full.

3.2 PRE ALARM (ON/OFF): If this option is ON, event recording starts several seconds ahead of actual event triggered time. The alarm pre-recording time differs according to video quality setting.

## 4. VIDEO QUALITY



### 4. VIDEO QUALITY

4.1 LEVEL (HIGH / NORMAL / LOW): Select desired video level from 'LOW' to 'HIGH'.

Compression Bitrate for HIGH: 1.2Mbps

Compression Bitrate for Normal: 750Kbps

Compression Bitrate for Low: 500Kbps

4.2 POST RECORDING TIME: Post recording time means the time between one event and the next one. 1 second to 30 minutes can be set up.

#### 4.3 FRAME RATE

PAL: Selectable among 25 / 12 / 8 / 6 / 5 / 1 / 0.5 / 0.2 / 0.1

NTSC: Selectable among 30 / 15 / 10 / 6 / 3 / 1 / 0.5 / 0.2 / 0.1

##### 4.3.1 PRE RECORDING TIME

High: up to 5 seconds for pre-recording available

Normal: 750Kbps / up to 8 seconds for pre-recording available

Low: 500Kbps / up to 10 seconds for pre-recording available

4.3.2 REMAINING MEMORY: This shows remaining storage capacity for further recording.

4.3.3 REMAINING TIME: This shows remaining time for further recording.

**Note 1:** 1.3.1 to 1.3.4 are automatically entered when video quality is set. You cannot change the values.

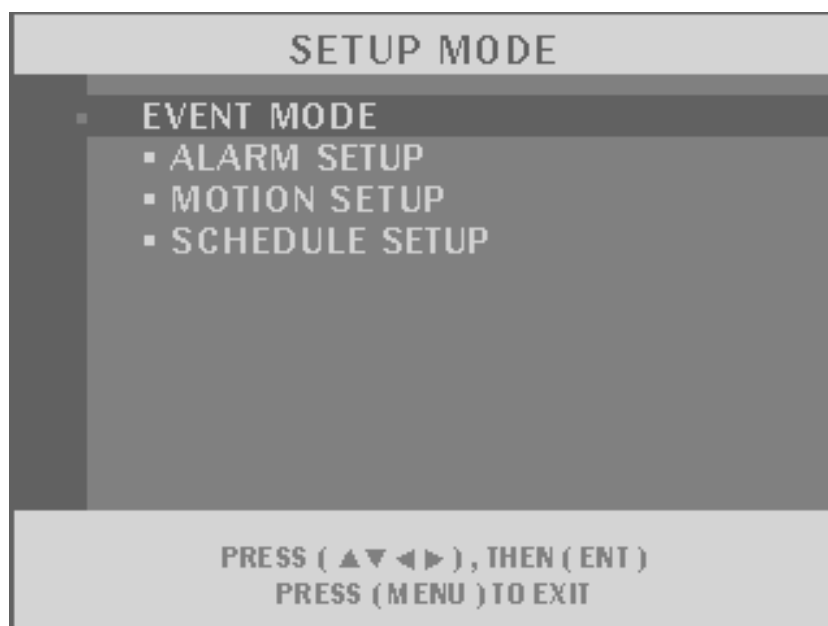
**Note 2:** The higher the video quality, the clearer the image will be during playback.

The lower the video quality, the more space you will save on the SD Memory.

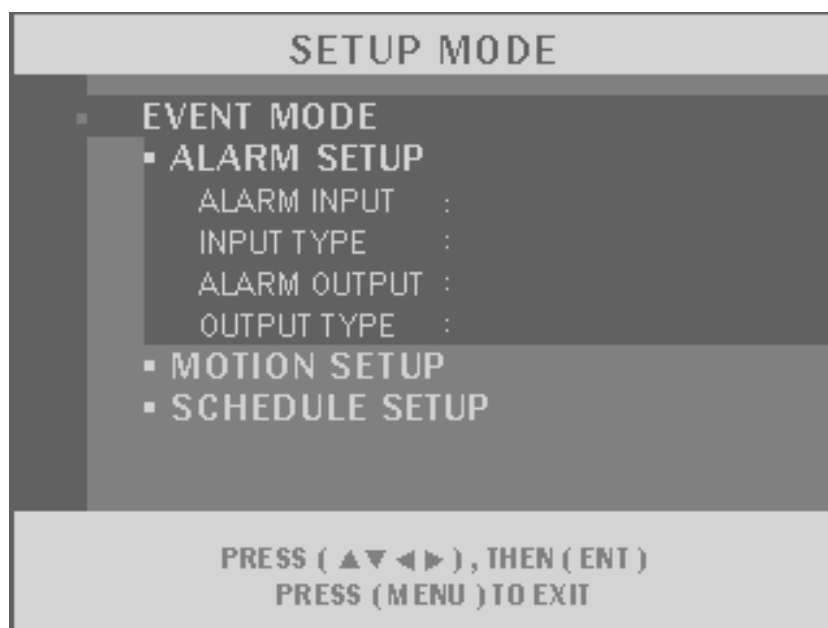
**Note 3:** The video quality in View Mode is not affected by the video quality setting.

These settings only affect the video quality during playback of recorded video.

## 5. EVENT MODE



### 5.1 ALARM SETUP



5.1.1 ALARM INPUT (ON / OFF): Select 'ON' if you want to use alarm input device.

5.1.2 TYPE: Select alarm input type between 'NO' and 'NC'

NC: NORMAL CLOSE

NO: NORMAL OPEN

**Note:** In NORMAL-CLOSE mode, if an intruder cuts the cable line that connects the sensor to the AKR-100,

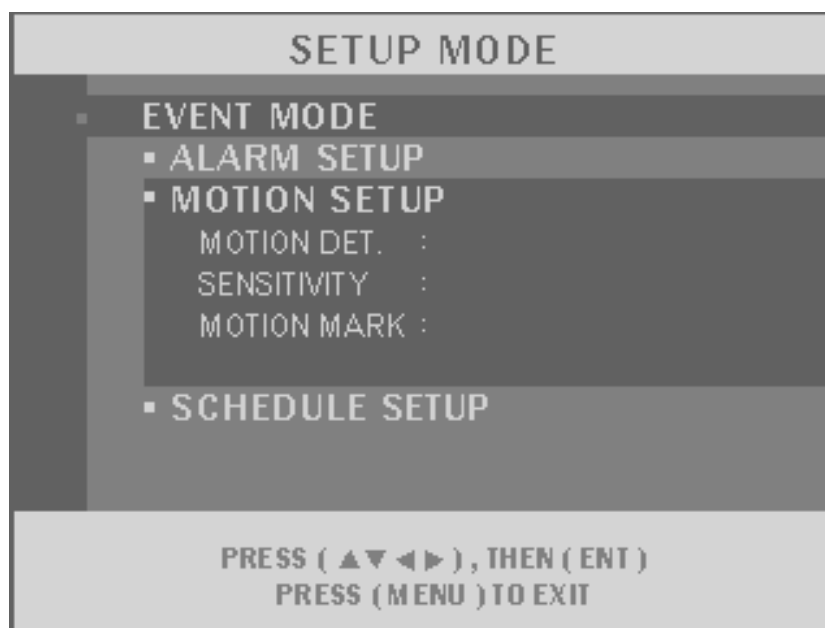


*sensor recording starts automatically. In NORMAL-OPEN mode, if an intruder cuts the cable line that connects the sensor to the AKR-100, the sensor recording will not start at.*

5.1.3 ALARM OUTPUT (ON / OFF): Select 'ON' if you want to use alarm output device

5.1.4 TYPE: Select alarm output type between 'NO' and 'NC'.

## 5.2 MOTION SETUP

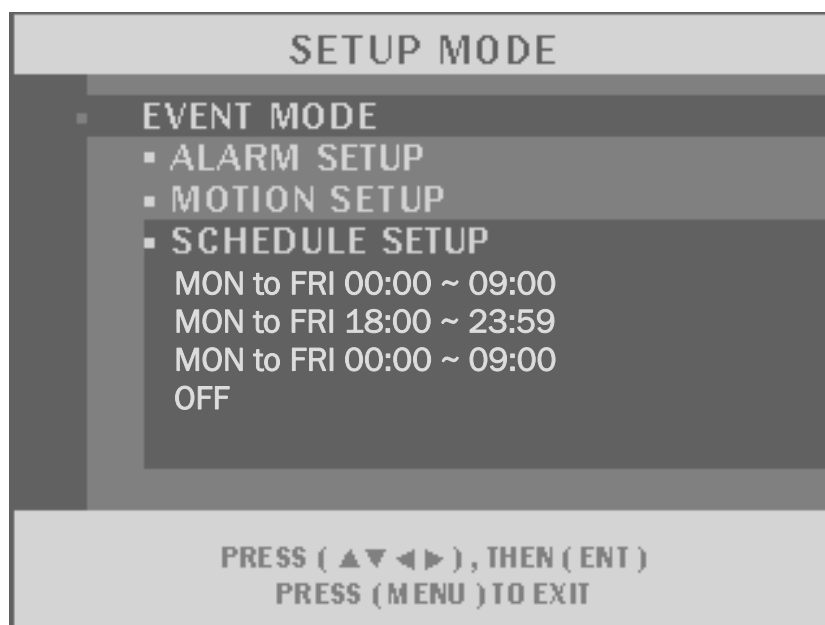


5.2.1 MOTION (ON / OFF): Select 'ON' if you want to use motion detection.

5.2.2 SENSITIVITY (LOW / NORMAL / HIGH): You can select the degree of sensitivity of motion detection. The higher degree is, the more sensitively reacts AKR-100 to small movements.

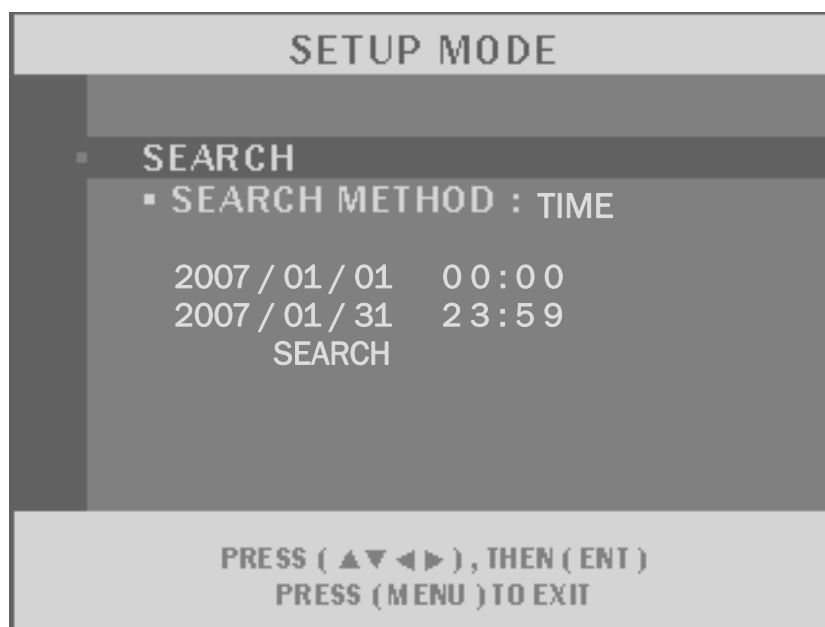
5.2.3. MOTION MARK (ON / OFF): Select 'ON' if you want to display motion mark on the monitor.

### 5.3 SCHEDULE SETUP



The recording time can be scheduled on this menu. Up to 4 schedules can be set up. Configure period of time when recording is available.

## 6. SEARCH

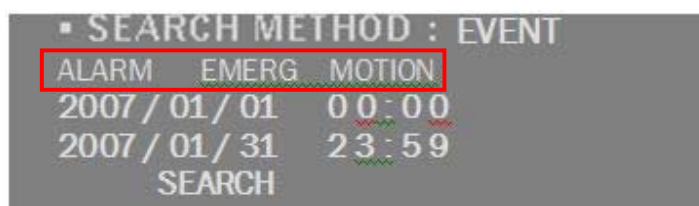


The recorded files in SD Memory can be easily searched through 'SEARCH' menu. After entering searching option in the fields, click 'SEARCH' to bring search result.

6.1 SEARCH METHOD: There are three ways to search recorded files; TIME, EVENT, BOTH (TIME & EVENT)

6.1.1 SEARCH MODE – TIME: Enter period of time when recorded files were generated.

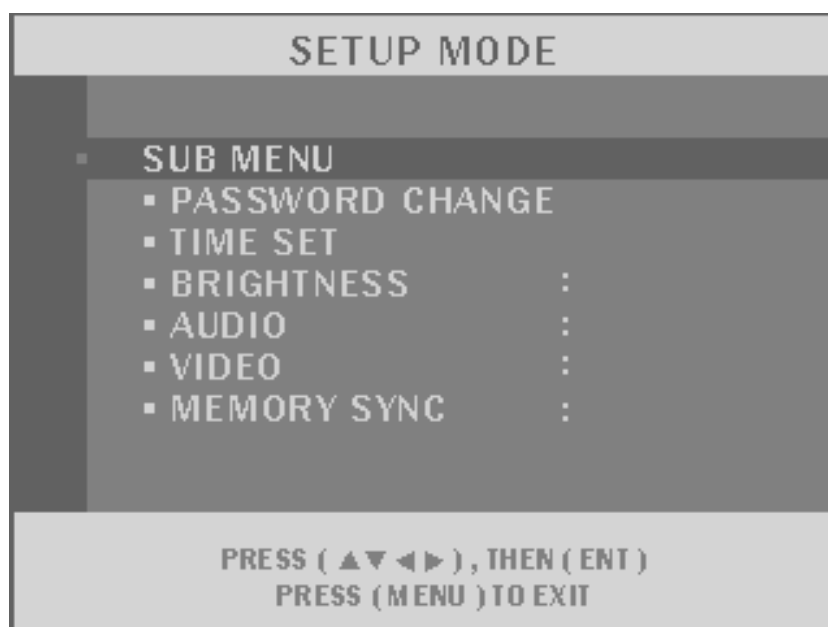
6.1.2 SEARCH MODE – EVENT: When you select 'EVENT (or BOTH) on SEARCH MODE', additional search conditions opens; ALARM / EMERG (Emergency) / MOTION



You can select 2 or more conditions simultaneously (ALARM / EMERG / MOTION).

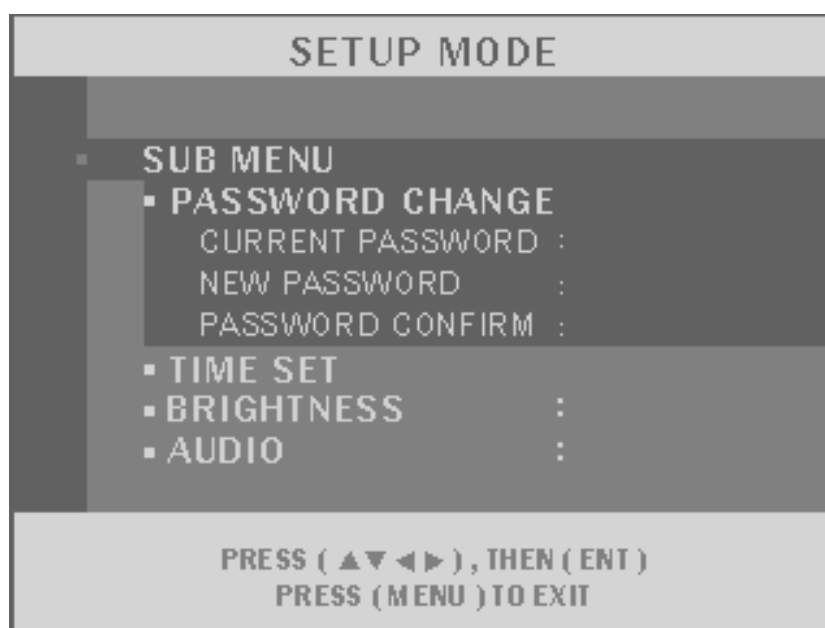
6.1.3 SEARCH MODE – BOTH: Configure search condition as both 'TIME' and 'EVENT'.

## 7. SUB MENU



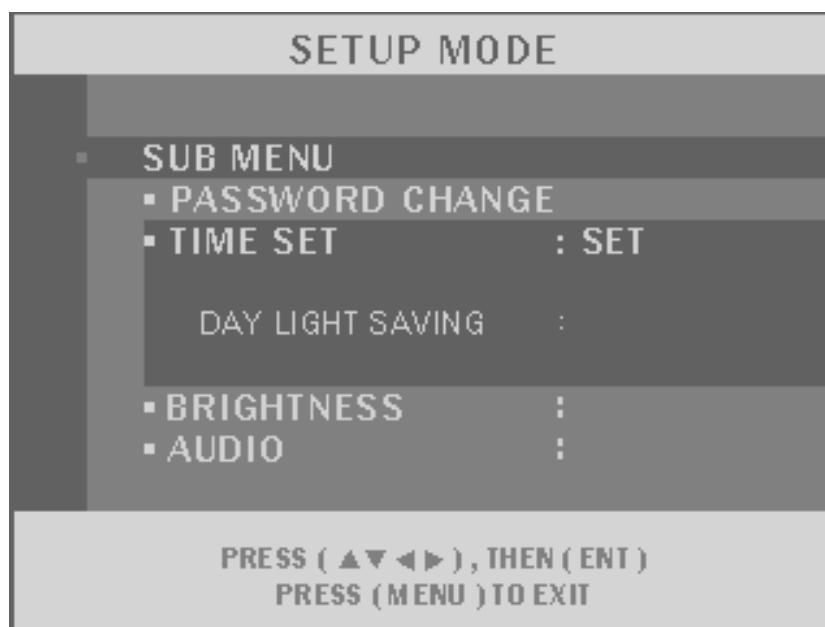
To change a password, navigate to PASSWORD CHANGE in the SUB MENU and press the select button [ENT]. The following screen will appear:

## 7.1 PASSWORD CHANGE



The Factory Default Password is 0000. To enter this number, press the UP/DOWN button on the remote control. Once you input the your current password, set a new six digit password using the buttons UP, REW, DOWN, FF on the remote control. Then, confirm your new password by entering the number again.

## 7.2 TIME SET

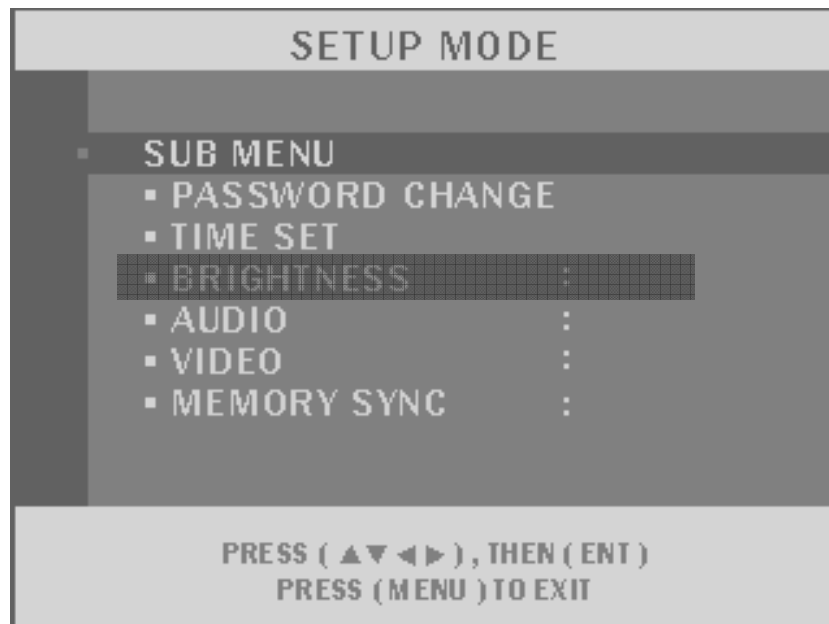


Configure current time and 'day light saving' option. When you set up current time, the field order should be as follows;

2004/02/17 = year/month/day 19:44:32 = hour/minute/second

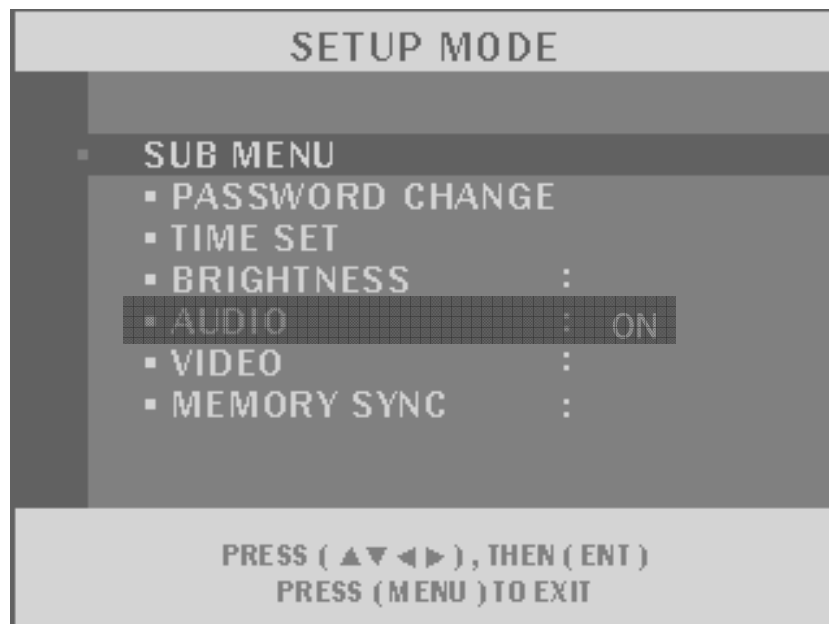
**7.2.1 DAY LIGHT SAVING (ON/OFF):** SELECT 'ON' when you want to use day light saving time. You can set up a time of period when day light saving is applied.

### 7.3 BRIGHTNESS



Select brightness value among low, medium and high.

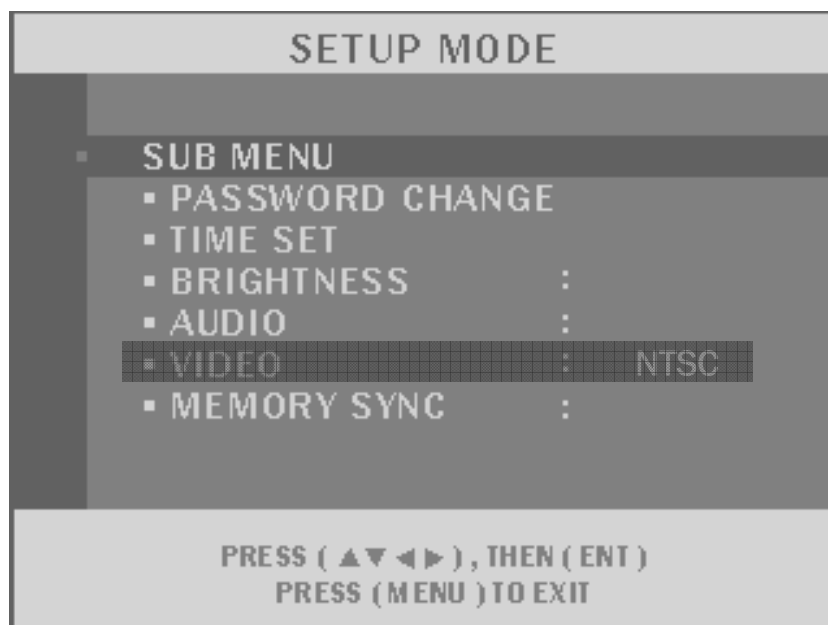
### 7.4 AUDIO



Audio function can be turned OFF or ON in the menu.

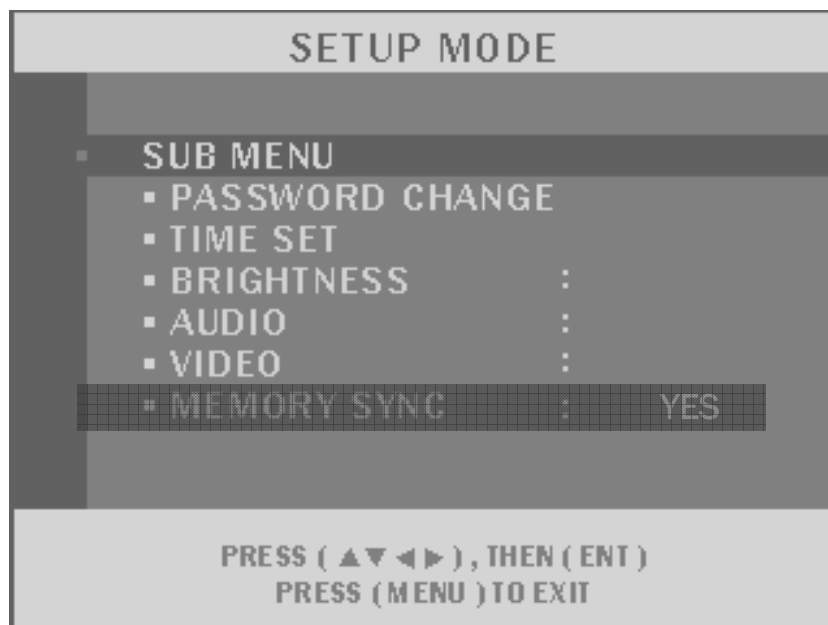
**Note:** When you do audio recording, you have to set the RECORD FRAMERATE over 4. If you set it under 4(1,2 or 3), audio recording cannot be supported.

## 7.5 VIDEO



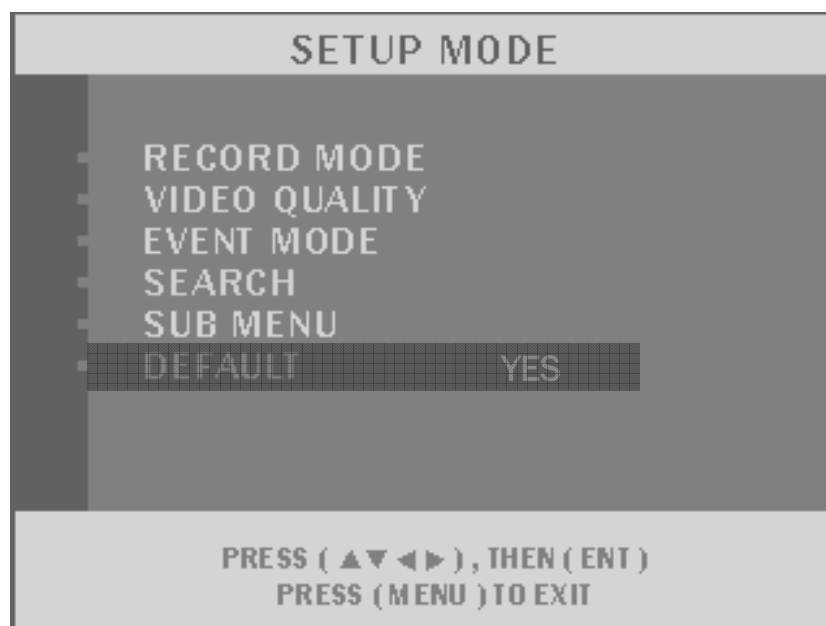
AKR-100 automatically recognizes video mode. When you connect NTSC camera to AKR-100, it detects the camera source accordingly. However, when you playback recorded files in SD card on AKR-100, you should select right video mode in order to avoid image distortion.

## 7.6 MEMORY SYNC



The index file is automatically generated and stored in SD card inserted into AKR-100. If the index file does not match to the files actually stored in the SD card, users can synchronize the index file list and actual file list. While synchronizing, the process percentage is displayed and then its value goes back to 'NO' when completed.

## 8. DEFAULT



To reset AKR-100 settings back to the factory default, select 'YES' and enter it. After resetting, the password will return to the default value (0000) as well as all settings of AKR-100 on the menu. To reset to factory default will not erase any video data in SD card.

## APPENDIX

### SPECIFICATION

ITEM	DESCRIPTION
<b>VIDEO</b>	
Video Input Format	PAL / NTSC auto detection function
Operating system	RTOS in firmware
Video Input Channels	1CH Composite video
Video Output Channels	1CH Composite video
Input Level	1.0Vp-p +/-10% Composite, 75 Ohm Unbalanced
Main TV Output 1	1.0Vp-p Composite, 75 Ohm Unbalanced
Display Resolution	352 x 288 PAL / 352 x 240 NTSC
Display frame rate	Max 25 frames/ sec PAL Max 30 frames/ sec NTSC
<b>RECORDING</b>	
Recording frame rate	Max 25 fps PAL Max 30fps NTSC
Recording Mode	Emergency / Schedule / Sensor Motion Detection
Recording Resolution	352 x 288 PAL / 352 x 240 NTSC
Compression format	Low: 500kbps / frame Normal: 700kbps / frame High: 1,200kbps / frame
Alarm Out Time	00,05,10,15,20,25,30, CONT
Internal Storage	SD Memory Card
<b>AUDIO</b>	
Compression	G.711, 8bit PCM
Input Channel	1CH (Connectable to any video channel)
Input Level	200mVp-p @ 20KOhm
Live Output	1CH
<b>SEARCHING &amp; PLAYBACK</b>	
Searching Method	Time / Event
<b>Viewer Software</b>	
Monitoring Environment	Client S/W
Connection	Supporting 1 Client
<b>ALARM</b>	
Alarm Output	1Port / NO Isolated Relay Output
* Motion Detection	Available
Video Input	1Port
Audio Input (mono)	1Port
Audio Output (mono)	1pin
I/O port	3 LED
SD Slot	1
<b>ELECTRICAL</b>	
Power Source	DC12V, 500mA
Power Consumption	Appx. 120mA
<b>ENVIRONMENTAL</b>	
Storage Temperature.	-20 ~ +70°C
Operating Temperature.	-20 ~ +60 °C
Humidity	30 ~ 80 %RH (non-condensing)
<b>PHYSICAL</b>	
Dimension	90 (W) x 45 (L) x 17 (H) mm
Weight	Appx. 33g
<b>OTHERS</b>	
Remote Control	Supplied



**RECORDING CONDITIONS**

Based on 1GB of storage with the installation of 1 camera

**Approximate Recording Time Table**

Mode	HIGH(30frame)	NORMAL(30frame)	LOW(30frame)	REMARK
Video Quality	1200Kbps	700Kbps	500Kbps	-
Recording Time	7,054 Sec	8,830 Sec	9,492 Sec	1GB (Actual storage space 900MB)

\* Recording time can differ according to SD card kinds.

**Approximate Average Image Size (dependant on site conditions)**

Quality	Low	Normal	High
Average Image Size	3kB	4kB	5kB



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